A STUDY OF THE INTELLIGENCE OF ANGLO-CHINESE CHILDREN

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1. Object of the Inquiry

THE present investigation was carried out with the object of determining the general intellectual level of Anglo-Chinese children, and of discovering what differences, if any, exist between their general standard of intelligence as compared with that of English children, selected from the same social environment. With this object in view the East End of London and Liverpool were chosen as the most suitable districts in which to carry out the main portion of the research. Anglo-Chinese communities have existed in these districts for nearly a century, and small groups of half-caste children are here easily accessible to the investigator. To obtain precise information about the population, and particularly about the numbers of half-caste children residing in these areas, is by no means easy. In London they are scattered over many different schools, and accordingly the simplest plan seemed to be to choose the chief examinees from the Chung Hwa Club* for Anglo-Chinese children, and to test them in the club itself. The children attending this club must be of Chinese parentage; otherwise, no special qualification is necessary and no fee is paid, the members therefore forming a group typical of the total Anglo-Chinese population. In Liverpool the half-caste children are nearly all grouped together in the three schools; these therefore were tested in the school itself.

In both London and Liverpool the children of mixed parentage form only a small minority; and it would be useless to compare them with a paired control group containing an equally small number of English children. We need, if possible, to compare the average intelligence of both communities estimated as a whole. The method here adopted was to test the entire number of English children at the five London schools which the majority of the Anglo-Chinese children were attending. In Liverpool, to obtain sufficient numbers the English children were tested at five schools: three of the schools were attended by Anglo-Chinese, the other two by English children only, but the social status and economic conditions were much the same as those of the half-castes.

2. Subjects, Tests, and Methods

The total number of children tested was 2,943 English and 116 Anglo-Chinese. This number was divided into two groups, namely (*a*) those between 8-10 years of age, and (*b*) those between 11-14 years of age. The latter group was tested (*a*) with the Northumberland Standardized Tests,* and (*b*) with perceptual tests.† As the standard of these two tests was considered to be too difficult for the younger children between 8 and 10, a further test, namely, the opposites test (Test 2 of Northumberland Standardized Tests) was employed. After the completion of these group tests, a performance test of intelligence‡ was used with every half-caste and

* The Chung Hwa Club is, in brief, an institution founded in 1928 for the benefit of Anglo-Chinese children in Limehouse. Voluntary workers arrange numerous useful and enjoyable extra-school activities, such as sports meetings, first-aid classes, etc. Evening courses are provided in which the children are taught (in English) about China and Chinese life and instructed in the elements of the Chinese language.

* Prepared by Professor C. Burt, and published by the University of London Press. Only the General Intelligence part was used.

† Non-verbal " g "-tests, used by Line, Stephenson and others.

‡ The scores used were based on the first edition of *Performance Tests of Intelligence* (Drever & Collins, 1928), and the norms upon *A First Laboratory Guide in Psychology* (1934), by the same authors.

TABLE I

SCHOOLS IN LIVERPOOL AND LONDON—NORTHUMBERLAND TESTS

Age Last Birthday	Norm Mark	No. in Group				Average Mark				Standard Deviation			
		London Children		Liverpool Children		London Children		Liverpool Children		London Children		Liverpool Children	
		A/C	E	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E
11	205	11	174	7	168	206·9	172·1	189·0	158·1	74·4	53·4	52·0	60·6
12	232	8	231	8	200	230·4	194·6	221·0	180·2	45·6	54·9	60·9	57·9
13	253	13	235	10	243	233·8	205·1	232·0	203·1	58·9	55·2	46·9	59·3
14	267	4	39	—	24	240·0	200·1	—	212·5	46·3	63·8	—	78·0

A/C=Anglo-Chinese, E=English

with a group of representative or average English children from London and Liverpool who were selected in the following way. Between 11-14 years of age the averages were determined by the Northumberland group test. Between the ages of 8 and 10, the average children were chosen by means of the Opposites Test. The number of average children thus selected was, as a rule, ten from each group—five boys and five girls. They were chosen so that the home environment, social and economic status, father's trade and earnings were as similar as possible to those of Anglo-Chinese children. In some cases, however, it was found that one or more of the conditions under consideration did not conform to the ideal basis of selection. Hence the numbers of children in any particular age group are not always exactly identical. No English children of 14 were selected for individual testing. This is the school-leaving age in elementary schools, and consequently a sufficient number of the children could not be obtained.

In all, in both London and Liverpool, 107 English children, aged 8-13, were thus selected.

3. DESCRIPTION OF RESULTS

Differences obtained with the Northumberland Tests

With the Northumberland Tests, the Anglo-Chinese show consistently better results than the English children (see Table I). Expressed in terms of marks, their superiority is shown in the first column of Table II below.

TABLE II

DIFFERENCE BETWEEN AVERAGE MARKS OF ANGLO-CHINESE AND ENGLISH CHILDREN

Age		London Children	Liverpool Children
		Maximum total marks 308	
11	Anglo-Chinese higher by	34·9±15·4	30·9±14·0
12	,, ,, ,,	35·8±10·7	40·8±14·8
13	,, ,, ,,	28·7±11·0	28·9±10·3
14	,, ,, ,,	39·9±17·1	—

Having seen from the above table how the Anglo-Chinese and English children compare with each other, we may now proceed to a comparison of the marks of the half-castes with the standard of norms. This shows that, judged by the standard norms for the general population, the Anglo-Chinese in London are practically up to the average at 11 and 12 years of age; at 13 years, however, their marks are little above the theoretical norm of a child of 12; while at 14 the average mark of the Anglo-Chinese child differs but slightly from the norm of a child of 13.*

With regard to the East End English children, the marks show that the average score of the children of 11 here tested is

* It must be remembered, however, that the norms represent averages for the entire school population and include a due proportion of brighter children who ordinarily leave the elementary schools for the central and secondary schools.

approximately two marks below the norm of the average Londoner of 10; at 12 years, the score is equivalent to that of an average Londoner of about 11·33 years of age. The score obtained at 13 years of age is slightly lower than the norm for a child of 11, while at 14 years of age it is somewhat lower than that of the 13-years-old children.

In Liverpool the Anglo-Chinese again show greater proficiency in the Northumberland Test than the English. This is demonstrated in Table I. No comparison could be made in Liverpool between children of 14, since it was impossible to get into touch with Anglo-Chinese children of this age. It is interesting to note that at every age both the English and Anglo-Chinese children in London showed greater proficiency in performing the test than did those of Liverpool.

With regard to the English children tested, in London and Liverpool those of the 11 and 12 years age groups showed differences of average marks which amounted to more than three times the differences of the probable errors, while those of the 13 and 14 years age groups did not; in the case of the Anglo-Chinese children, the difference in any of the age groups did not amount to three times the probable error.

It should be noted that, wherever differences of average marks are mentioned, the reader is not to understand that the differences quoted are necessarily equal to three times the probable error, unless specifically stated. According to the usual convention, unless a difference is equal to three times its probable error, it is regarded as "statistically insignificant." Nevertheless, any difference which is larger than the probable error may have some slight suggestive value, even if not statistically significant in the conventional sense.

The Mental Ratio of Anglo-Chinese Children as Shown in the Northumberland Test

As the number of half-caste children in the separate age groups is so small, it will be better to compare the mental ratios (I.Q.s) of the two groups as a whole. These can be calculated from the norms published by Professor Burt. It appears that the I.Q. of the London half-castes is 102·71 and that of the Liverpool half-castes 99·44.

Differences Obtained with the Opposites Test

In this test (see Table III), which is Test 2 of the Northumberland Tests, the marks obtained by the English children in London are slightly higher than those of the Anglo-Chinese, except at 9, where there was no appreciable difference. In Liverpool the marks of the Anglo-Chinese at 8 and 10 years of age were better than those of the English children; at 9 years of age, however, those of the English children were higher.

The same fact is again evident—namely, that the Liverpool children, both English and Anglo-Chinese, are slower in this test than the London children. The average differences of the English children showed high statistical significance (about 7 or 8 times the probable error).

TABLE III

SCHOOLS IN LONDON AND LIVERPOOL—OPPOSITE TEST

Age Last Birthday	No. in Group				Average Mark				Standard Deviation			
	London Children		Liverpool Children		London Children		Liverpool Children		London Children		Liverpool Children	
	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E
8	11	278	16	181	16·9	17·9	14·0	12·8	8·6	12·4	7·7	8·7
9	11	335	13	186	24·5	24·1	16·2	18·0	15·8	12·4	10·4	10·8
10	7	381	4	206	28·0	30·7	24·7	21·5	14·2	13·5	18·5	11·4

A/C=Anglo-Chinese, E=English

TABLE IV

SCHOOLS IN LONDON AND LIVERPOOL—PERCEPTUAL TESTS

Age Last Birthday	No. in Group				Average Mark				Standard Deviation			
	London Children		Liverpool Children		London Children		Liverpool Children		London Children		Liverpool Children	
	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E
11	11	96	7	117	31·2	30·6	30·8	22·4	17·4	15·0	8·0	12·9
12	8	152	6	171	44·4	35·9	33·5	24·8	21·2	14·2	11·5	14·6
13	13	178	9	245	33·7	38·0	40·8	28·9	11·0	16·3	18·7	15·1
14	4	26	—	24	39·2	33·7	—	40·8	9·9	18·0	—	19·3

A/C=Anglo-Chinese, E=English

Differences obtained with the Perceptual Tests

In London the results (see Table IV) show that Anglo-Chinese children of 11, 12 and 14 years obtained higher marks than English children of corresponding ages; English children of 13 years, however, proved better than Anglo-Chinese of the same age group. The surprisingly low mark of the Anglo-Chinese, which is even lower than that obtained by children one year younger, is probably a mere consequence of sampling—due to the smaller number of children of this age obtainable for testing.

In Liverpool the Anglo-Chinese children of 11, 12 and 13, all obtained higher average marks than English children of like ages. The only difference that showed any statistical significance was that of Liverpool children at the age of 12.

In comparing the results of the two cities thus obtained, we find that the figures of the first three age groups (11, 12 and 13 years) are highly reliable from a statistical point of view, while the fourth (14 years of age) is not. These show that English children in London are definitely superior at 11 and 12 years, though not, apparently, at 13 years. At this age the Liverpool children are better. As

TABLE V

SCHOOLS IN LONDON AND LIVERPOOL—MENTAL RATIO FROM FORM BOARD TESTS

Age Last Birthday	No. in Group				Mean I.Q.				Standard Deviation			
	London Children		Liverpool Children		London Children		Liverpool Children		London Children		Liverpool Children	
	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E	A/C	E
8	11	8	5	6	129·2	112·1	120·6	121·1	15·9	9·0	13·7	18·2
9	11	7	13	8	131·6	111·3	119·7	102·7	31·6	9·5	10·5	13·1
10	7	11	4	8	116·4	114·9	127·9	103·7	15·6	9·0	27·7	7·9
11	13	8	10	9	128·0	98·4	112·3	89·9	23·3	10·6	18·7	9·5
12	8	6	7	7	127·1	107·8	116·5	105·0	15·8	20·1	23·5	6·6
13	13	17	11	10	112·0	106·8	110·6	101·3	18·8	17·4	16·2	10·6
14	6	—	—	—	102·7	—	—	—	14·4	—	—	—

A/C=Anglo-Chinese, E=English

for the last group, the result indicates a possible superiority—very slight no doubt—of the Liverpool children.

Mental Ratios with Form Board Tests

This test (see Table V) differs from the foregoing in that the recognized standard of norms allows for sex differences. Here, too, it must be remembered that the English children form a selected group. Accordingly, the separate norms for the boys and girls were averaged when comparing half-castes and English children. This was done in order to make the comparison fall into line with the system used in the other tests in which the standard of norms are not differentiated with regard to sex. In calculating I.Q.s the double basis (i.e. the two different sets of norms for boys and girls) was used.

In all age groups the I.Q.s of the Anglo-Chinese in both cities are higher than those of the English children, with the exception of the 8-year-old Liverpool children, who were slightly better. The differences are shown in Table VI.

TABLE VI

DIFFERENCE BETWEEN AVERAGE I.Q'S OF ANGLO-CHINESE AND ENGLISH CHILDREN

Age		London Children	Liverpool Children
8	Anglo-Chinese higher by	17·1± 3·9	−0·5± 6·5
9	,, ,, ,,	20·2± 6·9	17·1± 4·2
10	,, ,, ,,	1·5± 4·4	24·1± 9·5
11	,, ,, ,,	29·6± 5·0	22·5± 4·5
12	,, ,, ,,	19·4± 6·7	11·5± 6·2
13	,, ,, ,,	5·2± 4·6	9·3± 4·0

N.B.—Minus sign indicates that English children are better than Anglo-Chinese.

Table VI compares the mental ratios of the Anglo-Chinese and all the English children in London and Liverpool respectively. Many of the differences are statistically significant. It should be noticed that the average I.Q.s of all the London children (i.e. English and Anglo-Chinese together) for the form board test are better than those of the Liverpool children of both races.

The Effect of Sex Difference

Although the scope of this article does not permit of a detailed discussion on the effect of sex difference, the following two points should be noted in passing. Firstly, the Liverpool children (both Anglo-Chinese and English), taken as a whole, show a much greater sex difference than the London children. The result, however, is hardly "significant," none of the differences being equal to three times the probable error. Secondly, no marked sex difference is shown by the London children in the Northumberland, perceptual and opposites tests, but in the form board test this difference between boys and girls is well marked.

4. CORRELATIONS

As already mentioned, children between 8 and 10 years of age were given one group test only, namely the opposites test, and therefore no correlation is possible in their case. In the other eight groups, however, i.e. 11-12, 12-13 and 13-14 years, three kinds of tests, namely, the Northumberland, perceptual and form board test were used; a double correlation was, therefore, possible, that is, the correlations between the tests were first calculated and then the correlations among the four different groups (Anglo-Chinese children and English children in London, and Anglo-Chinese and English children in Liverpool). The results are shown in Table VII.

It could scarcely be necessary or possible to demonstrate here that a single general factor (intelligence) underlies all the tests, particularly in their three different forms; but the results are certainly consistent with this view. At the same time, more limited or specific factors seem to be operative as well. For example, the perceptual tests did not correlate so highly with the verbal tests as the verbal tests did with each other, or as the perceptual tests did among themselves. This also applies to the form board tests. This is consistent with the familiar view that there is a specific verbal factor, and possibly a perceptual factor, and perhaps even a distinct eye-and-hand co-ordination factor.

Adverse criticism might suggest that verbal group testing is not so satisfactory as testing each individual child, and further that the verbal tests, being in English, may be

TABLE VII

A GRAND AVERAGE OF CORRELATIONS, WITH AGE PARTIALLED OUT, BASED ON ALL FOUR GROUPS POOLED TOGETHER (N=106)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Instructions	1	—	33	50	20	52	40	52	42	28	10	18	20	00	48	37
Opposites	2		—	49	38	39	28	20	25	07	12	08	08	04	33	13
Similarity	3			—	25	27	30	30	23	16	18	18	16	01	32	24
Mixed Sentences ...	4				—	28	17	22	35	17	11	26	10	11	07	02
Sentence Completion ...	5					—	40	39	48	27	17	17	39	12	35	16
Reasons	6						—	49	40	35	16	21	08	19	25	23
Simple Reasoning ...	7							—	24	28	11	15	01	00	40	27
Argument	8								—	34	14	25	36	07	32	12
Absurdities										—	05	03	07	01	23	22
Perceptual Tests	10										—	56	52	54	19	14
	11											—	56	41	19	17
	12												—	56	20	21
	13													—	09	13
Form Board Tests	14														—	47
	15															—

The average for the three groups of tests in the above table.

	1–9	10–13	14–14
1–9	32	12	25
10–13	—	52	16
14–15		—	47

harder for the Anglo-Chinese than for the native English. This last objection can be easily set aside, since for the Anglo-Chinese children here tested there was no language difficulty whatsoever. It must also be remembered that many of the children to whom group tests were given were also tested individually, and the results of the two types of tests confirmed each other.

Above all, it would seem from the correlations that the different types of tests give similar results and are really measuring the same thing both for the English on the one hand and for the Anglo-Chinese on the other. According to the correlations between the three groups of tests calculated, it appears that a difference of race did not affect the relations between the tests any more than a difference of town.

The probable errors were calculated separately for each coefficient of correlation, but it will be sufficient here to note only the highest and the lowest. The probable errors ranged from 0·065 for the lowest correlations to 0·044 for the higher correlations.

5. Summary and Conclusions

The main outcome of the results detailed above may be thus summed up.

1. In the Northumberland, perceptual and form board tests, the Anglo-Chinese children on the whole excel the English.

2. In the opposites test, English children, from 8-10 years of age, are slightly better than half-caste children.

3. Generally speaking, London children, both English and half-caste, appear mentally superior to Liverpool children of both races.

6. Suggested Explanation of Results

A glance at the above conclusions indicates that an attempt should be made to answer two fundamental questions: (1) Why are the mental abilities of Anglo-Chinese children superior to the English children? (2) Why are the London children superior to the Liverpool children?

In regard to the first question the following tentative suggestions may be offered.

1. *The Economic Factor.*—In the first place it appears that, although both English

and Chinese homes are obviously poor, the latter are as a rule not quite as poor as those of the typical English families of the district.

This is largely due to the fact that the Chinese workman is rather more easily satisfied than the English workman, who often refuses simple work which is ill-paid because he fancies he deserves something better. Apart from this, the Chinese workman, being most usually employed by his fellow countrymen, there tends to be more co-operation between employer and employee than is the case with English labourers and the Chinese employee is but rarely involved in trade union strikes. Although it cannot be claimed that the economic factor is directly responsible for inherent intelligence, it is only reasonable to assume that the whole course of intellectual development is not completely unaffected by it.

If this be so, although it is impossible to point to the superior economic condition of the Anglo-Chinese families as a concrete reason for their intellectual superiority, it should be borne in mind that the half-caste children are favoured by this initial advantage.

2. *Racial Tradition and Heredity.*—The Anglo-Chinese children certainly owe some characteristics in their mental make-up to their fathers, who come from a people who represent an older civilization, and whom public opinion, if nothing else, has taught to value learning and culture.

3. *Possible Influence of Home Environment.*—The home environment of the Anglo-Chinese children is generally more conducive to educational achievement than that of the typical East End child. Employment of spare time has an important bearing on this point. Two subsidiary advantages which favour the Anglo-Chinese are :

(*a*) Their parents, who are frequently shopkeepers, being at home most of the day, have every opportunity of directing the spare-time activities of their children, such as encouraging them to read in the evening, etc.

(*b*) The parents of the English children of the East End are very often dock-labourers and factory hands, whose taste in the employment of spare time is usually—although it would be rash to make too sweeping a generalization—in athletics, the cinema and watching boxing, football, or cricket matches. The children learn from their parents to interest themselves in athletics to a much greater degree than do the Anglo-Chinese, whose fathers are as a rule uninterested in such matters and consequently influence their children in the direction of quieter pursuits.

4. *The Indirect Effect of Race Prejudice.*—The children of mixed marriages are raised in a home environment which is more or less aware of race prejudice. This vague feeling of race prejudice may perhaps be scarcely clear or conscious ; but it is manifest in a certain race sensitiveness in the children, and a desire on their part to prove to their English classmates that they are in no way inferior. In other words, they have a feeling of being on trial ; and one of the obvious ways of justifying themselves in the eyes of their fellow scholars and of their teachers is to concentrate on achieving success in school attainments. It is significant, in this connection, that all elementary school teachers with whom this question was discussed were unanimously of the opinion that the Anglo-Chinese children are, as a whole, extremely amenable to discipline, and that they show particular application to their lessons.

It now remains to consider the second question. Why are the London children superior to those of Liverpool ? The difference may be largely explained by environment. The school organization, the class-room instruction, and the cultural influences outside the school are undoubtedly superior in the main in London.

The differences in the standards and facilities for education were noticeable even to a casual observer. In Liverpool it appeared that the schools were not so amply staffed as those in London. For example, it was frequently observed that in Liverpool a single teacher was required to take two classes at the same time, a procedure which certainly does not occur in the L.C.C. schools. Apart from this, it appears that the general standard required of the London teachers

themselves is somewhat higher than that of Liverpool. It is thus obvious that, when the educational environments are so dissimilar, the actual standard of the educational achievements will likewise vary considerably.

The innate difference in intelligence, if it exists, would be a little harder to explain. One might, however, suppose that in the main the more intelligent of whatever race would tend to gravitate and to hold their own in the capital. Since living is cheaper in Liverpool, and since the standard of comfort is lower, one would naturally get there lower representatives both of English and of foreign populations than in the metropolis.

In conclusion, the fact that really there are no very significant differences in regard to intelligence must be repeated and emphasized. The mere fact that a little group of Anglo-Chinese children on the whole excels a little group of English children in certain selected tests does not of itself mean very much, and the main result of the present research can do no more than suggest, what the psychologist previously suspected but may possibly come as a surprise to the social worker and to the plain man, that the difference between the two races is after all extremely small.

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